Trend Study 27-5-03

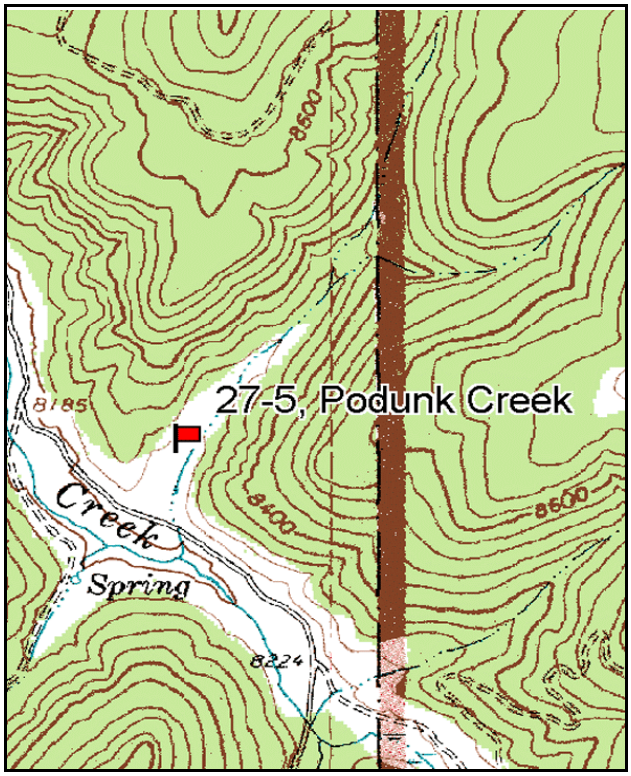
Study site name: Podunk Creek . Vegetation type: Dry Meadow .

Compass bearing: frequency baseline 185 degrees magnetic.

Frequency belt placement: line 1 (11 & 71ft), line 2 (34ft), line 3 (59ft), line 4 (95ft).

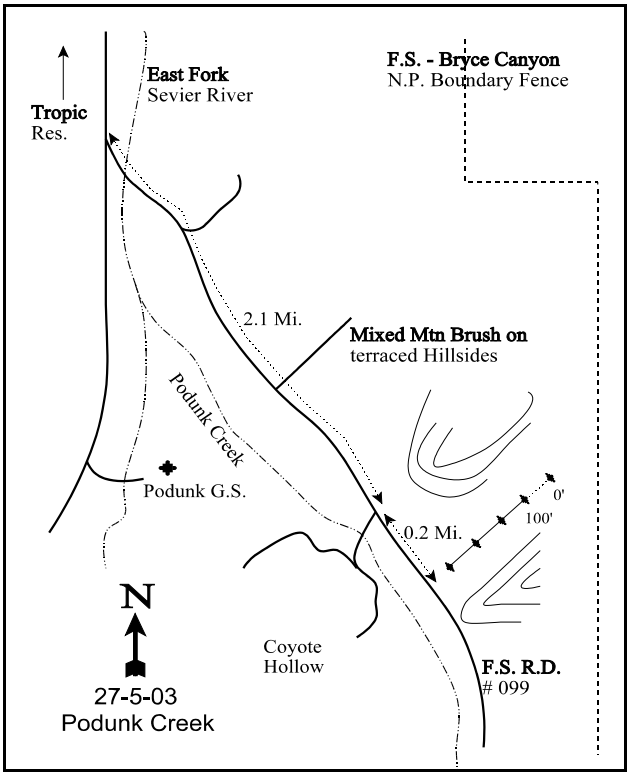
LOCATION DESCRIPTION

Travel about 7.0 miles south from Tropic Reservoir on the East Fork of the Sevier River Road to a major fork. Turn left towards Podunk Creek and the park boundary. Travel 2.1 miles SE on the main road up Podunk Creek to a fork at Coyote Hollow. Stay left on USFS road #099 and continue about 0.2 miles to a point in the middle of the valley to the north. The transect is in the bottom of this seeded meadow valley. The end of the baseline can be found 125 feet north of the road. The study is marked by short fenceposts. The 0-foot baseline stake is 375 feet north of the end stake as the study runs from there back to the southwest.



Map Name: Podunk Creek

Township 38S , Range 4W , Section 19



Diagrammatic Sketch

GPS: NAD 27, UTM 12S 4148754 N, 387799 E

DISCUSSION

Podunk Creek - Trend Study No. 27-5

This study is located in a narrow valley off of Podunk Creek. It samples a contour-trenched and seeded dry meadow. Due to serious erosion and gully formation caused by overgrazing in the early part of the areas grazing history, watershed rehabilitation treatments were undertaken in the 1960's all along the East Fork of the Sevier River drainage. The treatment here successfully established a dense stand of perennial grasses, stopped overland flows and erosion, and helped heal the adjacent gully. Erosion is now almost non-existent due to the contoured trenching treatment and the dense grass and litter cover. The valley slopes gently to the south into Podunk Creek. Elevation at the site is 8,200 feet. The site showed very little big game use in 2003. Elk use was estimated at 4 days use/acre (10 edu/ha), and no deer pellets were sampled in the pellet transect in 2003. This upper part of the East Fork watershed is grazed by cattle in late summer. Cattle use was estimated at 72 days use/acre (177 cdu/ha) in 2003. Most of the cattle use appeared to be from the previous grazing season. Use has been moderate to heavy over the years due to the close proximity of the site to water.

The soil is deep with an effective rooting depth of almost 19 inches. Soil texture analysis indicates it to be a clay loam with a neutral pH (7.2). Percent organic matter is relatively high at 4.1%, the highest amount on the unit. Very little evidence of erosion was present on the site in 1997 and 2003. Soils were rated as stable from an erosion condition class assessment in 2003. Vegetation and litter cover are moderately high on the site, although bare ground has ranged from 22%-34% since 1987.

Browse is not a significant component of this community. The surrounding hills are dominated by mixed conifer and aspen with no evidence of forest invading into the meadow. The larger sampling method used beginning in 1992 picked up a small number of shrubs. The only fairly common species found are several species of rabbitbrush. These shrubs show occasional moderate or heavy use, but most are unutilized.

A very dense stand of grasses characterizes the meadow. Smooth brome is the most abundant species having been sampled in nearly every quadrat in all surveys, and providing 87% and 95% of the total grass cover in 1997 and 2003 respectively. Smooth brome is a vigorous, rhizomatous species which is a sod former and provides excellent ground cover. Smooth brome also is an excellent forage plant for livestock and wildlife. Letterman needlegrass, Kentucky bluegrass, and mountain muhly were all common prior to the 2003 reading, but all 3 of these species declined in nested frequency with dry conditions in 2003. Due to heavy livestock use in 1987, little seed production was observed that summer. Use was moderate in 1992 and 1997 with grasses showing good seed production. Grass production was only fair in 2003 with the drought, and grasshopper use was noted as being high. Forbs provide a fair forage source on the site as well. The most numerous species have included western aster, trailing fleabane, redroot eriogonum, and northwest cinquefoil. Most of these species are low growing increasers. Trailing fleabane significantly increased in nested frequency between 1997 and 2003 and western aster was not sampled.

1992 TREND ASSESSMENT

The trend for soil is stable even with an average cover value of 27% for bare ground. With most other communities, this high of a value for bare ground could indicate possible future problems. Because herbaceous species make up 96% of the total cover, soils have excellent protection from high intensity summer storms. The trend for browse is not important on this summer range as it only makes up 4% of the total vegetative cover. However, trend for browse for this site appears stable, but almost non-existent. The herbaceous understory is very vigorous and is dominated by 1 species (smooth brome). Trend for grasses and forbs is slightly up for both with regard to their sum of nested frequency values.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - slightly up (4)

1997 TREND ASSESSMENT

Trend for soil is stable even though percent cover of vegetation declined somewhat. Litter cover increased substantially which helps offset the decline in vegetation. Percent bare ground is still relatively low at 22% and there does not appear to be an erosion problem. Trend for the small browse component appears up slightly although not an important aspect on this summer range. Trend for the herbaceous understory is down slightly. Sum of nested frequency of grasses and forbs has declined by 31%. However, nested frequency of the dominant species, smooth brome has not changed significantly since 1987. The most obvious change is the significant decline in the nested frequency of Kentucky bluegrass. Quadrat frequency was 77% with an average cover value of over 7% in 1992. Currently, it has a quadrat frequency of only 19% and an average cover value of less than one percent.

TREND ASSESSMENT
soil - stable (3)
browse - up slightly (4)
herbaceous understory - down slightly (2)

2003 TREND ASSESSMENT

Trend for soil is slightly down. Bare ground increased from 22% to 34%, vegetation and litter cover both show slight declines, and the sum of nested frequency of perennial grasses and forbs decreased by over 15%. These changes are primarily the result of drought conditions prior to and including the 2003 sampling period, and should improve with normal precipitation patterns. Erosion remains low on the site. Trend for browse is down as the combined density of the rabbitbrush species declined significantly in 2003. However as stated previous, the browse component is relatively unimportant on this meadow. Trend for the herbaceous understory is slightly down overall. Smooth brome remains the dominant species and remained stable in 2003. However, mountain muhly, Kentucky bluegrass, and Letterman needlegrass all declined in nested frequency in 2003 with drought. Perennial forbs actually increased in sum of nested frequency which is somewhat surprising with the dry conditions. All of the increase in forb frequency can be attributed to the low growing increaser trailing fleabane which has little forage value.

TREND ASSESSMENT
soil - slightly down (2)
browse - down (1)
herbaceous understory - slightly down (2)

HERBACEOUS TRENDS --
Management unit 27 , Study no: 5

Type	Species	Nested Frequency				Average Cover %		
		'87	'92	'97	'03	'92	'97	'03
G	Agropyron intermedium	b18	a-	a-	a-	-	-	-
G	Bromus inermis	356	348	357	343	31.07	22.11	21.77
G	Koeleria cristata	ab10	b15	a-	a-	.27	-	-
G	Muhlenbergia montana	b60	b75	b85	a6	1.50	1.56	.06
G	Poa fendleriana	1	2	-	5	.15	-	.03
G	Poa pratensis	b227	b248	a44	a13	7.19	.22	.07
G	Poa secunda	4	-	-	1	-	-	.00
G	Stipa columbiana	-	3	3	-	.03	.00	-
G	Stipa lettermani	b152	b178	b167	a79	4.14	1.66	1.06
Total for Annual Grasses		0	0	0	0	0	0	0
Total for Perennial Grasses		828	869	656	447	44.36	25.55	23.01
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F	Antennaria rosea	-	8	6	4	.56	.30	.18
F	Androsace septentrionalis (a)	-	b24	a-	b32	.11	-	.10
F	Artemisia dracunculus	-	-	8	-	-	.36	-
F	Arenaria fendleri	10	-	-	-	-	-	-
F	Astragalus convallarius	a-	b164	a1	a-	3.01	.00	-
F	Aster occidentalis	b40	a-	c124	a39	-	1.39	.21
F	Astragalus spp.	2	-	-	6	.00	-	.06
F	Castilleja linariaefolia	-	-	3	-	-	.00	-
F	Cruciferae	5	-	-	-	-	-	-
F	Equisetum spp.	2	-	-	-	-	-	-
F	Erigeron flagellaris	c298	b194	a53	b227	4.52	.65	5.21
F	Erigeron spp.	A-	a-	b18	a-	-	.11	-
F	Eriogonum racemosum	ab17	ab18	b29	a10	.75	.64	.22
F	Hymenoxys richardsonii	4	6	-	-	.09	-	-
F	Potentilla concinna	a-	a-	a-	b44	-	-	1.24
F	Polygonum douglasii (a)	-	-	5	-	-	.02	-
F	Potentilla gracilis	ab36	c82	b51	a15	6.46	2.15	.46
F	Polygonum spp.	-	14	-	-	.03	-	-
F	Senecio spartioides	9	4	-	-	.01	-	-
F	Taraxacum officinale	3	-	-	-	-	-	-
F	Tragopogon dubius	3	7	-	10	.09	-	.02
F	Unknown forb-perennial	2	-	-	-	-	-	-
F	Vicia americana	-	2	-	-	.00	-	-

Type	Species	Nested Frequency				Average Cover %		
		'87	'92	'97	'03	'92	'97	'03
Total for Annual Forbs		0	24	5	32	0.10	0.01	0.10
Total for Perennial Forbs		431	499	293	355	15.56	5.63	7.62
Total for Forbs		431	523	298	387	15.67	5.65	7.72

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Management unit 27 , Study no: 5

Type	Species	Strip Frequency			Average Cover %		
		'92	'97	'03	'92	'97	'03
B	Chrysothamnus nauseosus hololeucus	0	12	0	-	1.09	-
B	Chrysothamnus parryi	5	0	6	.78	.15	-
B	Chrysothamnus vaseyi	34	44	4	1.75	3.19	.03
B	Chrysothamnus viscidiflorus lanceolatus	6	2	26	.18	.30	.78
B	Gutierrezia sarothrae	1	1	2	-	.15	-
Total for Browse		46	59	38	2.71	4.88	0.81

CANOPY COVER, LINE INTERCEPT --
Management unit 27 , Study no: 5

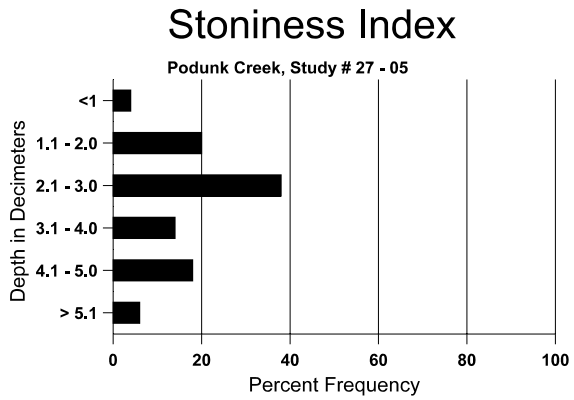
Species	Percent Cover
	'03
Chrysothamnus vaseyi	.33
Chrysothamnus viscidiflorus lanceolatus	1.20

BASIC COVER --
Management unit 27 , Study no: 5

Cover Type	Average Cover %			
	'87	'92	'97	'03
Vegetation	19.75	53.47	39.04	32.59
Rock	1.25	5.67	.96	3.80
Pavement	3.50	0	4.96	5.92
Litter	52.00	28.00	39.34	34.06
Cryptogams	0	.00	0	0
Bare Ground	23.50	27.11	22.03	33.68

SOIL ANALYSIS DATA --
Management unit 27, Study no: 5, Study Name: Podunk Creek

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
18.5	60.0 (18.1)	7.2	31.7	37.7	30.6	4.1	24.5	332.8	0.7



PELLET GROUP DATA --
Management unit 27 , Study no: 5

Type	Quadrat Frequency '92	'97	'03
Elk	-	3	-
Deer	3	4	-
Cattle	6	23	32

Days use per acre (ha) '03
4 (10)
-
72 (177)

BROWSE CHARACTERISTICS --
Management unit 27 , Study no: 5

		Age class distribution (plants per acre)					Utilization				
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
Chrysothamnus nauseosus hololeucus											
87	**0**	-	-	-	-	-	0	0	-	0	-/-
92	**0**	-	-	-	-	-	0	0	-	0	-/-
97	**480**	-	280	200	-	-	0	0	-	0	16/19
03	**0**	-	-	-	-	-	0	0	-	0	-/-
Chrysothamnus parryi											
87	**0**	-	-	-	-	-	0	0	0	0	-/-
92	**120**	-	40	40	40	-	33	0	33	0	-/-
97	**0**	-	-	-	-	-	0	0	0	0	19/21
03	**200**	-	-	160	40	-	40	0	20	20	14/18

		Age class distribution (plants per acre)					Utilization				
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
Chrysothamnus vaseyi											
87	**0**	-	-	-	-	-	0	0	0	0	-/-
92	**2860**	-	440	2180	240	-	0	0	8	3	-/-
97	**4060**	-	20	4040	-	-	0	0	0	0	6/13
03	**100**	-	-	100	-	-	0	40	0	0	13/17
Chrysothamnus viscidiflorus lanceolatus											
87	**0**	-	-	-	-	-	0	0	0	0	-/-
92	**340**	-	40	180	120	-	18	0	35	0	-/-
97	**80**	-	40	40	-	-	0	0	0	0	10/11
03	**1180**	-	-	900	280	-	0	0	24	0	9/14
Eriogonum microthecum											
87	**0**	-	-	-	-	-	0	0	-	0	-/-
92	**0**	-	-	-	-	-	0	0	-	0	-/-
97	**0**	-	-	-	-	-	0	0	-	0	17/18
03	**0**	-	-	-	-	-	0	0	-	0	-/-
Gutierrezia sarothrae											
87	**0**	-	-	-	-	-	0	0	0	0	-/-
92	**20**	-	-	20	-	-	0	0	0	0	-/-
97	**20**	-	-	20	-	-	0	0	0	0	15/20
03	**60**	-	-	20	40	-	0	0	67	0	4/4